

New House Defects Smart Checklist
Based on QCLASSIC Standard

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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis, and, in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Master of Engineering of Computer System and Software Engineering.

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at University Malaysia Pahang or any other institutions.

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ABSTRAK

Rumah adalah sebuah bangunan yang berfungsi sebagai tempat tinggal untuk satu atau keluarga menurut Merriam Webster yang bermaksud semua orang terutama keluarga memerlukan sebuah rumah yang akan didiami. Sebuah rumah sangat penting untuk sebuah institusi keluarga, rumah yang berkualiti baik tepat. Isu ini bukan sahaja di Malaysia, tetapi ia adalah isu seluruh dunia mengikut United Nations. Rumah berkualiti baik pasti mahal, dan sesetengah orang tidak mampu membeli rumah itu. Ya, ada beberapa rumah mampu milik, tetapi kualitinya kurang dan tidak memenuhi standard. Kemudian, CIDB keluar dengan penyelesaian yang QLASSIC. QLASSIC adalah piawaian kebangsaan untuk industri pembinaan. QLASSIC adalah satu bentuk pendek Sistem Penilaian Kualiti dalam Pembinaan. QLASSIC adalah untuk pembangun dan orang awam yang merupakan pembeli rumah. Pada masa ini, CIDB hanya menyediakan buku panduan kualiti atas talian untuk pemilik rumah yang pemilik rumah boleh memuat turunnya di laman web CIDB. Senarai semak kualiti disediakan dalam buku atas talian dan jika terdapat beberapa kecacatan, pemilik rumah harus membuat laporan manual. Laporan manual termasuk menulis surat rasmi dan hantar ke pejabat pemaju. Oleh itu, tidak ada alat dalam talian untuk pemilik rumah dan tidak ada alat analisis yang menyokong pembuatan keputusan sistemik untuk pemilik rumah. Akibatnya, saya ingin membuat penyelidikan mengenai penilaian dalam talian untuk pemilik rumah. Senarai semak pintar akan mengandungi tujuh atribut, dan, dalam setiap atribut, akan ada beberapa syarat untuk atribut tersebut. Setiap syarat mempunyai satu tanda secara lalai. Oleh itu, markah yang diberikan akan dibahagikan kepada jumlah tanda atribut. Oleh itu, tanda tersebut akan disimpan dalam pangkalan data. Prototaip ini akan dibangunkan menggunakan fungsi Limesurvey yang telah diubah suai dengan pengekod html dan pangkalan data ringkas untuk menyimpan data. Kemudian, saya akan menggunakan Microsoft Excel untuk menganalisis data dan membuat visualisasi data daripadanya. Belum lagi, senarai semak dalam talian ini adalah laporan dalam talian dari pemilik rumah kepada pemaju, Persatuan Rumah dan lain-lain. Akhirnya, hasil yang dijangkakan juga akan memberi manfaat kepada Persatuan Rumah atau mungkin CIDB kerana analisis potensi yang akan keluar dari data ini adalah kecacatan utama berdasarkan projek, dan bahagian yang terbaik adalah corak kecacatan dari masa ke masa berdasarkan projek, pemaju dan rantau. Dengan analisis ini, ramalan dan pencegahan untuk projek seterusnya boleh dibuat. Oleh itu, akan menjimatkan banyak kos dan masa untuk pemaju atau untuk pihak yang berkaitan.

ABSTRACT

House is a building that serves as living quarters for one or a family according to Merriam Webster which means everyone especially family needs a house to be lived in. A house is very important to a family institution, a good quality house to be exact. This issue is not only in Malaysia, but it is worldwide issue according to United Nation. Good quality house is definitely expensive, and some people cannot afford the house. Yes, there are some affordable houses, but the quality is poor and not meet the standard. Then, CIDB came out with solution which is QLASSIC. QLASSIC is a national standard for construction industry. QLASSIC is a short form of Quality Assessment System in Construction. QLASSIC is for both developer and public which is house buyer. Currently, CIDB only provides online quality guide book for homeowners which is home owner can download it on CIDB website. The quality checklist is provided in the online book and if there are some defects, home owner has to make a manual report. A manual report including writing a formal letter and send it to the developer's office. Hence, there is no online tools for home owner and there is no analytical tools supporting systemic decision making for home owner. As a result, I would like to make a research on online online assessment for home owner. The smart checklist will contain seven attributes, and, in each attribute, there will be several conditions for that attributes. Each condition has one mark by default. So, the given mark will then be divided to total mark of the attribute. Hence, those mark will be stored in the database. The prototype will be developed using Limesurvey functionalities that had been modified with html coding and a simple database for storing data. Then, I will use Microsoft Excel to analyze the data and make a data visualization from it. Not to mention, these online checklists is an online report from home owner to developer, House Association etc. Finally, expected result will also benefit to House Association or maybe CIDB as the potential analytics that will come out from these data are major defects based on project, and the best part is the pattern of defects over time based on project, developer and region. With these analytics, prediction and prevention for next project can be made. Hence, will save lots of cost and time for developer or for related party.

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LIST OF SYMBOLS

LIST OF ABBREVIATIONS

CHAPTER 1

INTRODUCTION

1.1 Overview

This chapter gives a general summary and review of the proposed research in the thesis. Section 1.2 will tell about the complete background for Potential of Data Analysis in Construction Industry, Case Study of QLASSIC Online System. Next, section 1.3 gives a brief description of the problems of the current system. The goal and objectives of this research are stated in section 1.4. Moreover, in section 1.5 will be discussed the scope of the study, the significance of the Construction Quality Assessment is in section 1.6 and thesis organization is in section 1.7.

1.2 Background

A great civilized nation is built based on the good and well-functioning society. In order for the society to well function, a good and affordable house is a requirement. This is because a civilized nation comes from a good society and a good society comes from a good family. One must have a house especially a family. It is a mandatory for family to live in a good house and a good environment.

Affordable house has become a global issue and Malaysia as a developing country also faces this issue (Cheah & Almeida, 2016; Samad, Zainon, Rahim & Lou, 2017; Sani & Rahim, 2012). As Malaysia aiming to become a developed country by the year 2020, it is important for all the stakeholders address and find the most effective solution of that issue as this country population keeps growing and increasing year by year.

Furthermore, many initiatives and residential affordable or low-cost house (Samad et al., 2017) projects has been executed or budgeted to address the issue. Yet, the remaining issue is on the quality (Ismail, Ani, Razak, Tawil & Johar, 2015; Radzuan, Hamdan, Hamid, & Abdullah-Halim, 2011) of the house still becoming a major continuous concern. It is quite surprising that many house buyers do not know what and how to inspect the quality of the new house when they get the key.

Additionally, there are many people may not aware how much is the level of safety the building to live or work in. CIDB comes out with a National Standard for Construction Industry which is QLASSIC. What is QLASSIC actually? QLASSIC is Quality Assessment System in Construction (Izzah, 2017).

The procedure for measuring the construction material is only can be made by a few of authorized people and the sample from the particular building is only randomly chosen. For public, which is house buyer, CIDB comes out with an online quality guide book for homeowners. CIDB publish it on 2017. It is the first edition available online. So, anyone can download it from CIDB website. The title of the book is Quality Guide for Homeowners. There are seven attributes on the checklist including door, wall, ceiling, floor, window, fixture and M&E fittings.

Not to mention, there are several specifications of condition in each attribute. For example, for floor. There are six specification in floor attributes. First, the floor should be even and level and should not be more than 3mm over 1.20m. Second, no hollow sound when tapped on the floor tiles. Third, no paint drips or other stain marks on the floor finishing. Fourth, no cracks, chippings and visible damages on the floor finishing. Fifth, shading and tonality of the floor tiles or timber panels should be. Lastly, jointing between floor tiles or timber floor panels should be consistent.

On the other hand, affordable house is very important in a country. There is some affordable house, but its quality is very low according to Vice President of FOMCA in Harian Metro 2016(Hafiz Ithnin, 2016). The quality issue increases year by year as 2014 there were 340 reports on defects but on 2015 there were 1729 reports on defects(Hafiz Ithnin, 2016). Hence, CIDB came up with solution which is QLASSIC for developer and an online guidebook on quality guide for house buyer.

In fact, by 2020 the QCLASSIC standard will be compulsory to all government and private developer in order to produce quality but affordable houses(Abllah, 2019). According to Baru Bian, Ministry of Work, the average rate of QCLASSIC score from 2017 till 2018 is increasing from 72% to 74% and this shows the rise of awareness and commitment among developer in construction industry(Abllah, 2019).

Finally, yet importantly, affordable with standard quality houses are one of the Sustainable Development Goals by United Nations Development Programmes. Affordable housing is a key for development and social equality, United Nations says on World Habitat Day. Therefore, it is a global issue.

1.3 Problem Statement

Malaysia Construction Industry Development Board (CIDB) has developed a guide for home owner on what and how to inspect the standard quality of a new house. But the guide is in manual form and can be downloaded on their website. There are many house buyers or public still do not aware about the guide or standard.

I proposed a smart online checklist based on QCLASSIC standard for homeowners.

1.4 Objective

- 1) To review the use of software technology in house defects inspection.
- 2) To develop web-based prototype to measure the level of public awareness of quality inspection of the new house.
- 3) To evaluate the functionalities of QCLASSIC smart checklist.

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